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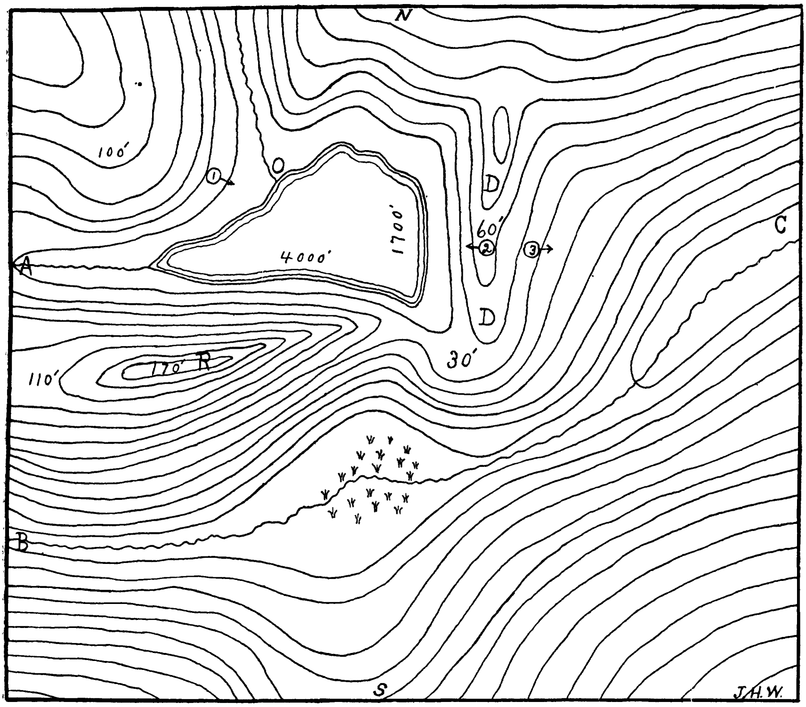
A GLACIALLY FORMED LAKE IN SUSQUEHANNA COUNTY, PENNSYLVANIA

By J. HOWARD WILSON, Ph.D.

An interesting case, in a small way, of the changing of preglacial drainage and the formation of a small lake by the deposit of glacial material across an older valley is found at Quaker Lake in Susquehanna County, Pa. It is one of a number of small lakes or ponds in that region and lies close to the northern boundary of the county less than nine miles as the crow flies from Binghamton, N. Y.



Sketch map of Quaker Lake in Susquehanna County, Pa. Approximate scale, 1:35,000. Contour interval, 20 ft. The letters are explained in the text; the numerals in circles with arrows represent the viewpoint and direction in which the three photographs were taken, the numbers corresponding to those of the figures. The map is not claimed to be accurate, but it shows the phenomena described. Some of the distances were roughly measured by pacing. The elevations were estimated or made by aneroid.

At this point, in preglacial times, two small valleys (A and B; *cf.* map), separated by a ridge of Upper Devonian shale and sandstone (R), united to form a fairly deep valley (C) which descended in a generally easterly direction until Snake Creek was reached, the latter proceeding in a northeasterly direction and emptying into the Susquehanna River some ten miles above Binghamton. The two small valleys or forks have an east-and-west direction, *i. e.* at right angles to the general movement of the ice.

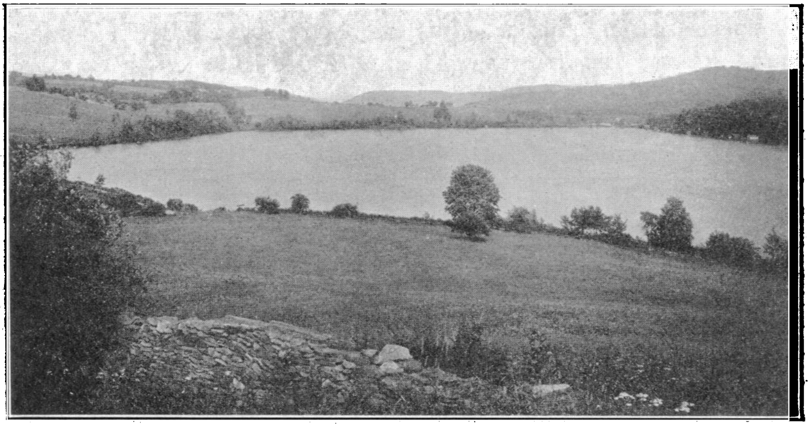


FIG. 1.

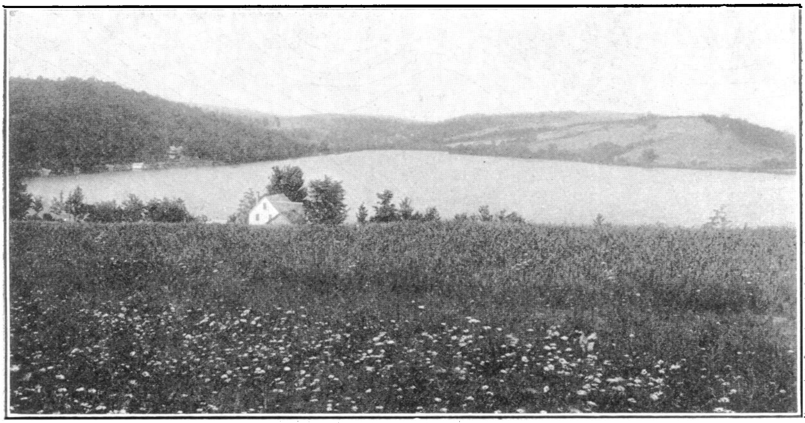


FIG. 2.

The lake was formed in the northern fork (A) by the building out, from the northern side of the main valley at point of forking, of a till-like deposit (D), with gravelly surface, which, with descending slope, crossed the valley at the end of the dividing ridge which it closely abutted, completely closing the northern fork and somewhat impinging on the southern one. This caused a lake to be formed in the northern fork and a marsh which was perhaps originally a shallow lake in the southern fork. The lake is about two-thirds of a mile long and one-half mile wide, and depths obtained from persons residing in the vicinity seem to agree with the slope indicated by the elevation of the valley above the lake (A) and that below the glacial dam (C). The glacial dam, as shown in Fig. 1 and seen from that point, is so plain and the older valley side from which it springs so distinct from it, that it appears almost artificial except for its size and diminishing height. Even at its southern portion, where it abuts against the end of the ridge (R), separating the two forks and thus forming the lake, it is still some thirty feet above the lake level, so that the lake, before overflowing here, found an outlet (O) on the northern rim of its basin. In Fig. 1 the outlet is in the hollow on the nearer shore to the left. The drainage of the fork thus, instead of flowing easterly into the main valley and then to Snake Creek, as in preglacial times, now flows north into an entirely different valley.

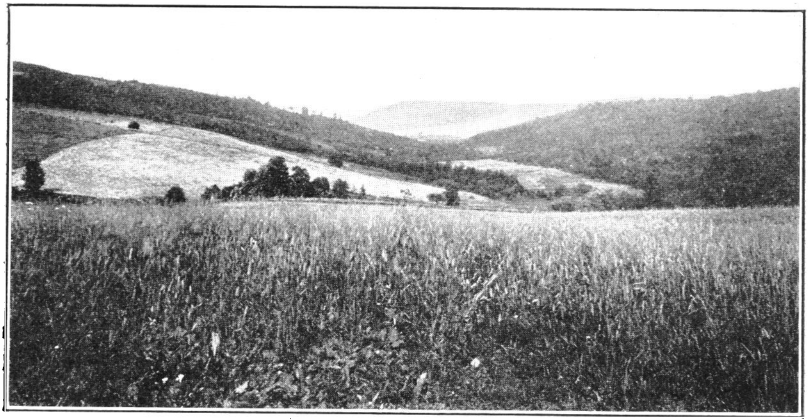


FIG. 3.

Fig. 2 taken from the glacial dam, looks up the lake to its narrow and shallow end and shows the effect of the impounding of the waters of a normally formed preglacial valley by the glacial dam. The outlet is here shown at the further shore to the extreme right.

Fig. 3 is taken from the dam in an opposite direction from Fig. 2 and shows well the lower and deeper part of the valley below the dam.